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EXAMINER	
LIGHTFOOT, ELENA TSOY	
ART UNIT	PAPER NUMBER
1792	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,017	HUISMAN, JAN WIETZE	
	Examiner	Art Unit	
	Elena Tsoy Lightfoot	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2007* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *86-136* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *86-136* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 11, 2007 has been entered.

Response to Amendment

Amendment filed on July 11, 2007 has been entered. Claims 86-136 are pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 86-105, 107-111, 114, 119-123, 128-136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al (US 5,683,772) in view of Reil (US 4,526,314), further in view of Mueller (US 4,098,742) and Keeler (US 4,172,064), as applied in the previous Office Action, and further in view of Berlin et al (WO99/58331).

Examiner Note: instead of WO99/58331, the Examiner will refer to US 6,692,801 of the same patent family.

Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al is applied here for the same reasons as set forth in paragraph 3 of the Office Action mailed on 7/15/2005:

Andersen et al discloses a method for manufacturing coated products such as cup (See column 22, line 13) comprising forming a base product from a mass containing *starch* as a natural polymer in a heated mold cavity including molds typically used in conventional ***injection molding*** **processes*** (See column 16, lines 50-53) such that ***cross-linkage*** **of the starch** occurs by **binding the *hydroxyl ions* of the starch** to cross-linking compounds such as dialdehydes, methylureas, and melamine formaldehyde resins (See column 56, lines 12-21), and applying coatings to the surface of the formed base product (See column 64, lines 60-67; column 65, lines 1-8) to achieve a uniform film with minimal defects on the surface of the article (See column 65, lines 9-11). FDA-approved coating is used for contact with foodstuffs (See column 66, lines 31-32). Andersen et al further teaches that some coatings may also be used to strengthen **places** where the articles are severely bent. A waterproof coating is desirable for articles intended to be in contact with water (obviously either facing outward or inward). See column 66, lines 25-38. Inorganic coatings are useful as a barrier to oxygen and moisture (water vapor) (See column 66, lines 44-45).

However, Andersen et al does not expressly teach that a strengthening coating (a second coating) is applied over a waterproof coating (a first coating) so that the base product is coated with a first coating upon relevant parts of the base product, and a second coating over at least a portion of the first coating (Claims 86, 130-132).

Reil teach that reinforcing strips can be applied over a waterproof coating of polyethylene layer (See column 8, line 24) coated on a paperboard web for cartons (See column 1, lines 11-14) in the regions of bending lines (See column 6, lines 32-47) to eliminate dangerous leakage locations (See column 3, lines 13-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a strengthening coating over a waterproof coating in Andersen et al in places where the base product would be severely bent with the expectation of eliminating dangerous leakage locations, as taught by Reil.

Andersen et al teaches that water-based coatings are preferred (See column 66, line 56). Therefore, a water-based second coating applied over first water proof coating contains an agent (water), and the first coating is substantially impermeable to the agent, as required by claim 122.

Andersen et al in view of Reil fails to teach that the first coating has a surface tension which is approximately equal to or lower than a surface tension of the surface of the base product (Claim 86); the surface tension may be reduced using a surface tension-reducing agents such as surfactants (which form few micelles) (Claim 100).

Andersen et al further teach that selection of a particular coating process depends on a number of substrate (i.e., article) variables such as *wettability*, porosity, etc., as well as coating formulation variables including total solids content, solvent base, *surface tension*, and rheology (See column 65, lines 11-17).

Mueller teaches that a coating formulation having surface tension higher than that of a substrate does not wet the substrate (See column 1, lines 35-45). **Keeler** teaches that the surface

tension of coating formulations can be reduced by incorporating surface tension-reducing agents such as surfactants (See column 2, lines 29-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formulated a composition for a first coating in Andersen et al in view of Reil with the use of surface tension-reducing agents so that a surface tension of the first coating composition is approximately equal to or lower than a surface tension of the surface of a base product with the expectation of providing the desired uniform coating with minimal defects since Mueller teaches that a coating formulation having surface tension higher than that of a substrate does not wet the substrate and Keeler teaches that the surface tension of coating formulations can be reduced by incorporating surface tension-reducing agents.

As to claim 91, Andersen et al further teach that the mass further contains mold releasing agents such as stearates (See column 53, lines 26-28), silicones and waxes (See column 53, lines 51-56). The Examiner Note: it is well known in the art that stearates, silicones and waxes have surface tension reducing properties.

As to claims 93, 112, Andersen et al further teach that a starch-based mass can be used as a substitute for a conventional paper-forming mass because the starch-based mass yields containers and other articles of a similar cross-section having comparable critical mechanical properties comparable to those made from the conventional paper-forming mass (See column 6, lines 5-10). In other words, a molded product or parts of the molded product in Andersen et al can also be made from a conventional paper-forming mass.

The Examiner Note: the meaning of a phrase "at least one mass is at least substantially manufactured as paper-forming mass" is not clear: whether mass is manufactured using a paper-making method or mass is formed from the same components as paper-forming mass. After reviewing the specification as a whole, the Examiner interpreted the claim as relating to a mass, which is formed substantially from the same components as paper-forming mass.

As to claims 90, 133-136, mold release agents such as silicones, waxes in an amount 0.05-15% by weight of the total solids (See column 53, lines 51-56, 66-67) are incorporated into the mass to improve the release of the molded product from the mold (See column 16, lines 27-30). It is the Examiner's position that silicone release agents would function substantially identically as those of claimed invention because the range covers the 0.2 wt % which according to the specification silicones added in amount of 0.2 wt % to the mass which is identical to the mass of the claimed invention and molded in a heated mold provides claimed functions (See specification, page 5, lines 1-5).

As to claims 94-97, Andersen et al fail to teach that: at least one of the coatings has a surface tension of less than 42 dyne/cm (Claim 94) or less than 36 dyne/cm (Claim 95) or less than 32 dyne/cm (Claim 96); a mass after molding (before coating) has a surface tension of less than 44 dyne/cm and greater than 30 dyne/cm (Claim 97).

As well known in the art, the mass surface tension is result-effective variable: the less surface tension of a mass the easier release from the mold, but more difficult to coat. As was discussed above, a surface tension of coating is also a result-effective parameter in a coating process.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant surface tension parameters (including those of claimed invention) in Andersen et al through routine experimentation in the absence of a showing of criticality.

As to claim 98, the mass, upon leaving the mold has moisture content of less than 3 wt % (See column 70, lines 6-29) while water is introduced into the molded mass by coating (See column 66, lines 63-67).

As to claim 99, Andersen et al further teach that a water-based system may be used for coatings (See column 66, lines 56-65).

It is the Examiner's position that the water-based system is one-phase system because silicones or waxes are used in an amount as little as 0.05-0.2 wt %.

As to claim 102, Andersen et al further teach that a coating can be applied either to a hot product directly in the mold or at ambient temperature (See column 65, lines 33-45).

As to claims 103-105, 107-109, one or more organic coating compositions (See column 66, lines 41-42) comprise *epoxy* resins, melamine, catalysts, acrylics, polyethylene, waxes, cellulose acetate, polylactic acid, polyvinyl alcohol or *mixtures* thereof (See column 65, lines 58-67; column 66, lines 1-24). It is well known in the art that *epoxy* resins contain reactive *epoxide* groups. In other words, the organic coating compositions comprise *epoxides* (cross-linker).

As to claim 109, one or more organic coatings provide barrier to moisture (increases water vapor proofness) (See column 66, line 18).

As to claim 110, one or more organic coatings provide barrier to grease or oils (See column 66, line 19).

As to claim 111, as was discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have covered some parts of a base product of Andersen et al with one coating only or keep them clear from coating and other parts with two coatings with the expectation of providing the desired surface characteristics of the coated product depending on intended use of a final product.

As to claim 114, a coating may be applied by spraying (See column 65, lines 18-21).

As to claims 119-121, Andersen et al further teach that when water is added with the coating or a water-based coating is used, an additional conditioning component is added to the formed product. The structural matrix of the product will absorb the water from the coating into the matrix to provide additional moisture thereto so that the product will be softened. The coating can also be flash dried on the surface and at the same time leave the moisture on the inside of the product for conditioning of the matrix a water-based coating. See column 66, lines 53-67; column 67, lines 1-3. Thus, water is an influencing agent acting as a softener, and water-based coating is relatively dense than water.

As to claim 123, polyethylene waxes (See column 66, lines 9-10) are incorporated into coating compositions to provide a barrier to moisture, oxygen and grease (See column 66, lines 17-20). It is well known in the art that waxes have surface tension reducing properties and are used as surface reducing agents in coating compositions to provide reduced surface tension of a coated layer. Therefore, the waxes incorporated into coating compositions of Andersen et al would also provide reduced surface tension of a coated layer.

As to claims 128-132, Andersen et al teach that coatings can be used for providing a more finished surface to the articles, and providing additional strength (See column 64, lines 65-

66) or for preventing aggregate and fiber "fly away" (i.e. moisture or vapor permeable) (See column 65, lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have coated a cup in Andersen et al in any manner depending on intended use of a final product including moisture or vapor permeable outside coatings since Andersen et al teach that various coatings in different combinations may be used for covering places of the molded product depending on intended use of the product.

As to Amendment of claim 86, Reil teaches that reinforcing strips of plastics (See column 10, lines 43-45) can be applied by welding (See column 6, lines 35-43) over a waterproof coating of polyethylene layer (See column 8, line 24) coated on a paperboard web for cartons (See column 1, lines 11-14) in the regions of bending lines (See column 6, lines 32-47) to eliminate dangerous leakage locations (See column 3, lines 13-16).

Reil fails to teach that the plastic strip is applied in a liquid form.

Berlin et al teaches that a plastics layer may be applied to a packaging laminate by ***melt*** **extrusion** or may be applied as a *pre-formed* film by hot pressure lamination e.g. with a heated roller (See column 4, lines 44-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied reinforcing strips of plastics in Reil by ***melt*** **extrusion** (claimed second *liquid* coating) instead of welding preformed strips since Berlin et al teaches that a plastics layer may be applied to a packaging laminate by melt extrusion or may be applied as a pre-formed film by hot pressure lamination.

3. Claims 86-105, 107-111, 114, 119-123, 128-136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of Narayan et al (US 5728824).

Applicants argue that Andersen et al fails to teach that injection molding is used to make a molded article. However, Narayan et al is cited here to show that ***Injection Molded*** **Articles of Fiber Reinforced Starch Compositions** were known in the art (See column 8, lines 64-65).

Therefore, if it could be argued that Andersen et al fails to teach the use of injection molding, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used injection molding for making molded article in Andersen et al from the fiber reinforced starch composition, as taught by Narayan et al.

4. Claim 106 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of JP 10114851 for the reasons of record set forth in paragraph 4 of the Office Action mailed on 7/15/2005.

5. Claims 112, 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of Hargadon (US 3,601,862) for the reasons of record set forth in paragraph 5 of the Office Action mailed on 7/15/2005.

6. Claims 115, 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of Ito (US 3,659,787) for the reasons of record set forth in paragraph 6 of the Office Action mailed on 7/15/2005

7. Claim 117 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of JP 07024367 for the reasons of record set forth in paragraph 7 of the Office Action mailed on 7/15/2005.

8. Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of Petterson (US 3,896,602) for the reasons of record set forth in paragraph 8 of the Office Action mailed on 7/15/2005.

9. Claims 124-127 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil, further in view of Mueller and Keeler, and further in view of Berlin et al, as applied above, and further in view of Rusincovitch, Jr. (US 5,304,411) for the reasons of record set forth in paragraph 9 of the Office Action mailed on 7/15/2005.

10. Claim 92 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andersen et al in view of Reil and Vente et al (US 4,935,187), further in view of Mueller and Keeler, and further in view of Berlin et al for the same reasons as above and for the reasons of record set forth in paragraph 9 of the Office Action mailed on 4/10/2006.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

* US 5728824 to Narayan et al is cited here to show that ***Injection Molded*** **Articles of Fiber Reinforced Starch Compositions** were known in the art (See column 8, lines 64-65).

Response to Arguments

Applicant's arguments with respect to amended claims have been considered but are moot in view of the new ground(s) of rejection.

As to Andersen et al,

(A) Throughout the prosecution of the parent application, Applicant has maintained that with regard to injection molding of plastics, it is not known by those skilled in the art that heating of the mold to a temperature above the temperature of injection would be advantageous

(emphasis added by the Examiner). Accordingly, the contention of the Examiner is incorrect. Applicant has never urged that Anderson et al had not disclosed heating of the mold since that is an integral element of their disclosure. However, it is clearly evident that Anderson et al does not disclose injection molding as known in the art but merely discloses that a mold cavity could conceivably have the form of a conventional injection or dye mold. This clearly does not disclose or teach the concept that injection molding is used. On the contrary, an analysis of the Anderson et al disclosure reveals that there is only a teaching of dye molds and dye molding techniques. Totally absent from the Anderson et al, disclosure is there any disclosure of injection of a mass under pressure into a mold which is already closed when injection is effected, the very essence of injection molding. Accordingly, Anderson et al does not disclose, teach or suggest the concept of injection molding. In fact, the patentees merely disclose a generic suggestion of a proposed shape for a mold.

The Examiner respectfully disagrees with this argument. First of all, in contrast to Applicants argument, ***Injection Molded* Articles of Fiber Reinforced Starch Compositions** were known in the art, as evidenced by Narayan et al (See column 8, lines 64-65). Second, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. heating of the mold to a temperature above the temperature of injection would be advantageous) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(B) Applicants argue that Anderson et al very clearly does not disclose that solidification by cross linkage of the starch molecules under pressure after injection as clearly disclosed by Applicant. In fact, Anderson et al merely disclose setting of the mass and perhaps crosslinking of additives.

The Examiner respectfully disagrees with this argument. In contrast to Applicants argument, Anderson et al very clearly discloses that ***cross-linkage*** of the starch in a heated mold occurs by *binding* the **hydroxyl ions of the starch** to cross-linking compounds such as dialdehydes, methylureas, and melamine formaldehyde resins (See column 56, lines 12-21). In other words, Anderson et al very clearly discloses that cross-linking of the *starch molecules* occurs in the heated mold as required by claim 89.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy Lightfoot whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy Lightfoot, Ph.D.
Primary Examiner
Art Unit 1792

December 4, 2008

/Elena Tsoy Lightfoot/